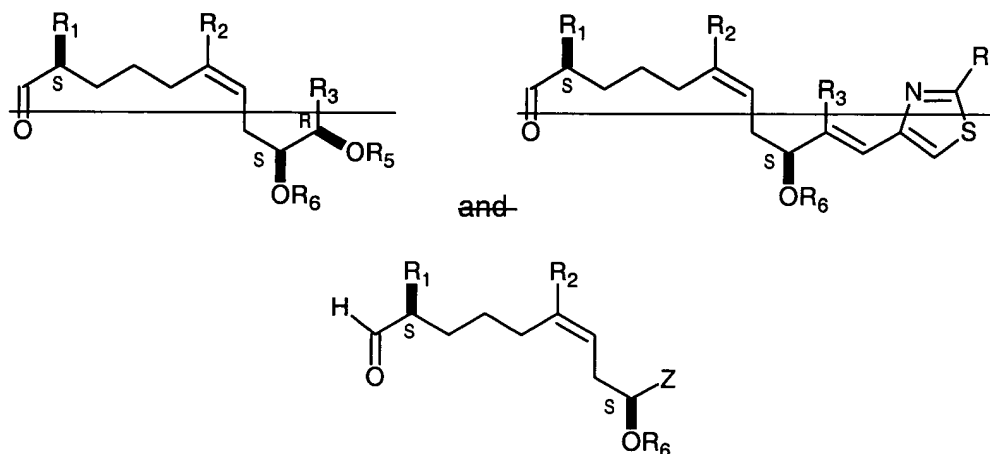


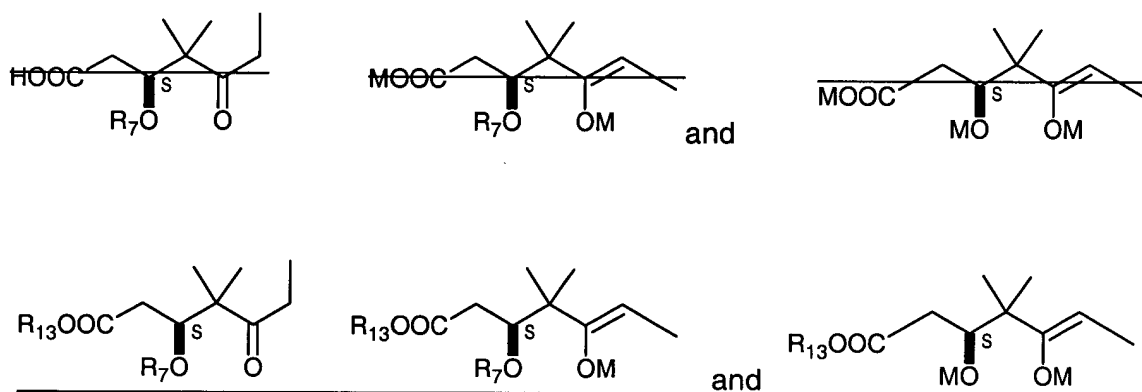
In the claims:

1. (Currently Amended) A method for use in producing epothilones and analogs and derivatives thereof, comprising:

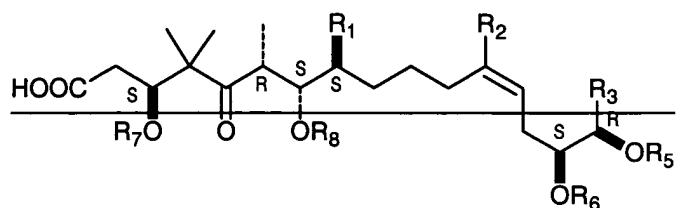
(a) performing an aldol condensation of a first compound selected from the formulas:



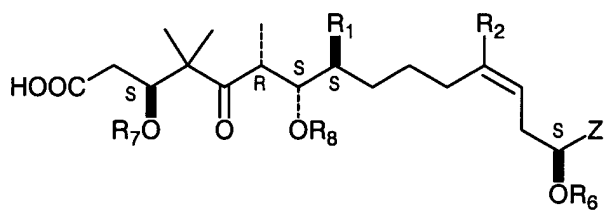
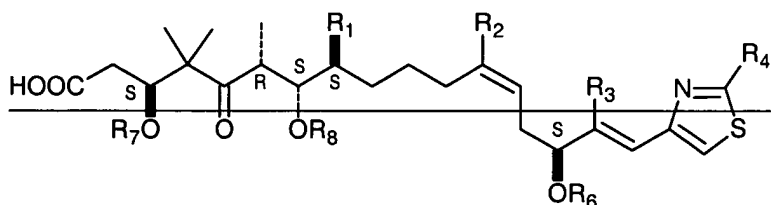
and stereoisomers thereof, with a second compound selected from the formulas:



and stereoisomers thereof, thereby to form a third compound selected from the formulas:



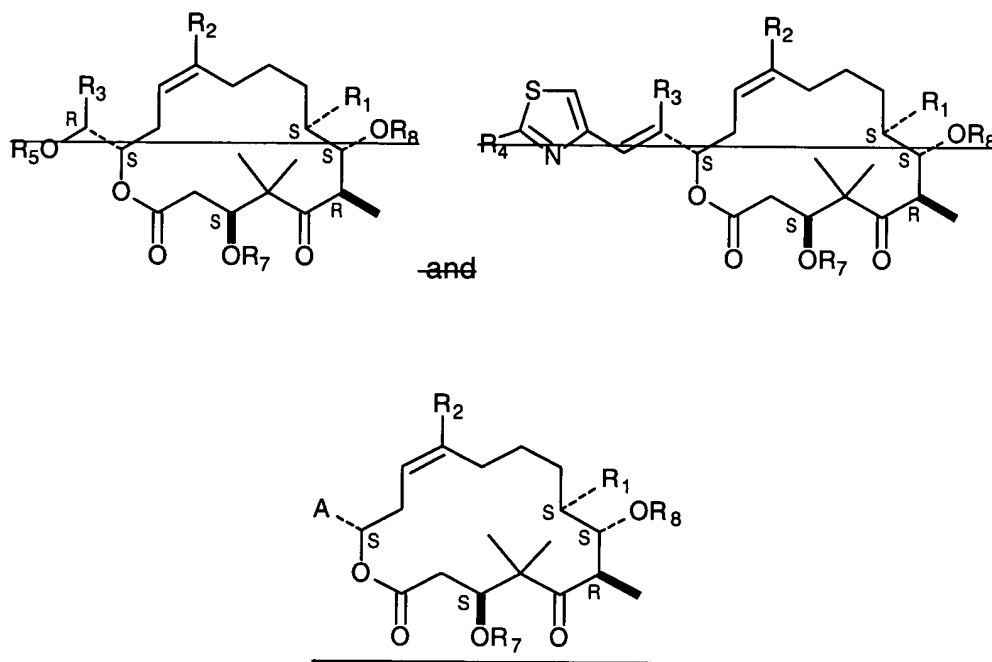
and

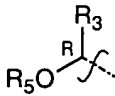


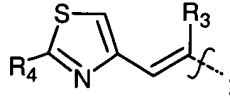
and stereoisomers thereof, wherein Z is selected from  and  ;

wherein  $R_1$ ,  $R_2$ ,  $R_3$  and  $R_4$  are each selected from H, alkyl, alkenyl, alkynyl, aryl, cycloalkyl, heterocyclo, and substitutions thereof; wherein  $R_5$ ,  $R_6$ ,  $R_7$  and  $R_8$  are each selected from H and a protecting group; wherein  $R_{13}$  is H or a metal salt; and wherein M is an alkali metal salt or transition metal salt; and

(b) performing a macrolactonization of the third compound thereby to form a fourth compound selected from the formulas:



and stereoisomers thereof, wherein A is selected from  and

 wherein R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> are each selected from H, alkyl, alkenyl, alkynyl, aryl, cycloalkyl, heterocyclo, and substitutions thereof; and wherein R<sub>5</sub>, R<sub>7</sub> and R<sub>8</sub> are each selected from H and a protecting group.

2. (Original) A method according to claim 1 wherein R<sub>1</sub>, R<sub>3</sub> and R<sub>4</sub> are each methyl, and R<sub>2</sub> is H or methyl.
3. (Original) A method according to claim 2 wherein R<sub>2</sub> is H.
4. (Original) A method according to claim 2 wherein R<sub>2</sub> is methyl.
5. (Original) A method according to claim 2 wherein at least one of R<sub>5</sub> - R<sub>8</sub> is TBS.

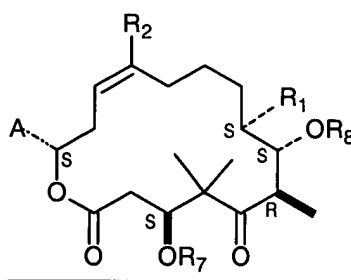
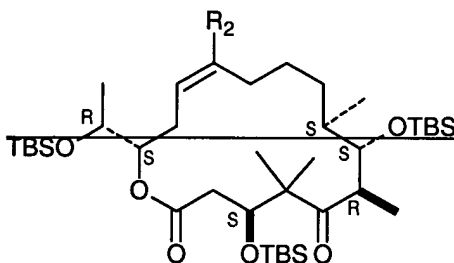
6. (Original) A method according to claim 2 wherein  $R_6$ ,  $R_7$  and  $R_8$  are each TBS.

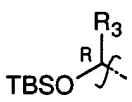
7. (Original) A method according to claim 2 wherein  $R_5$  is PMB.

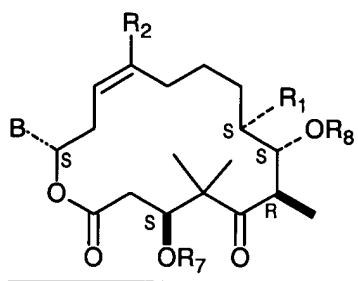
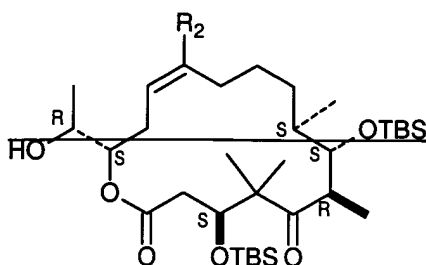
8. (Original) A method according to claim 2 wherein  $R_6$  is SEM.


9. (Original) A method according to claim 1 wherein  $R_5$  is selected from PMB, DPS and TBS; wherein  $R_6$  is selected from H, TBS, TMS, TIPS, PMBM and SEM; wherein  $R_7$  is selected from H, TBS, TROC,  $-\text{CO}(\text{CH}_2)_4\text{CH}_3$  and  $-\text{CO}(\text{CH}_2)_3\text{CH}=\text{CH}_2$ ; and wherein  $R_8$  is selected from H and TBS.

10. (Currently Amended) A method according to claim 1 wherein said fourth compound is of a formula selected from:

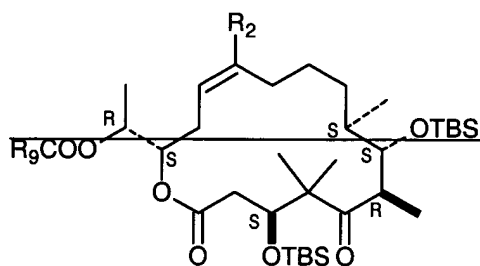


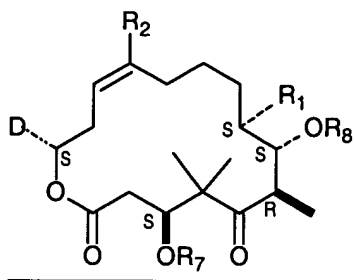
and stereoisomers thereof, wherein A is  where  $R_2$  is H or methyl;  $R_7$  and  $R_8$  are each selected from TBS, H, and a protecting group; and wherein said fourth compound is converted to a fifth compound of a formula selected from:




and stereoisomers thereof, wherein B is ; where R<sub>2</sub> is H or methyl; and R<sub>7</sub> and R<sub>8</sub> are each selected from TBS, H, and a protecting group.

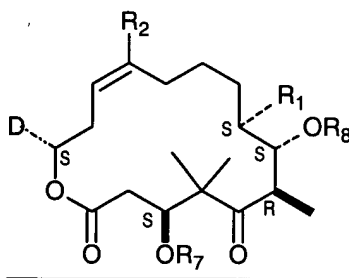
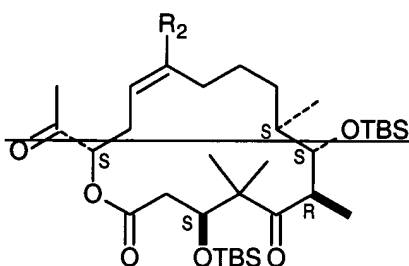
11. (Currently Amended) A method according to claim 10 wherein said fifth compound is converted to a sixth compound of a formula selected from:






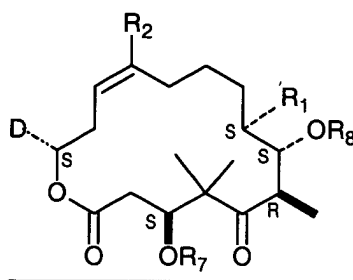
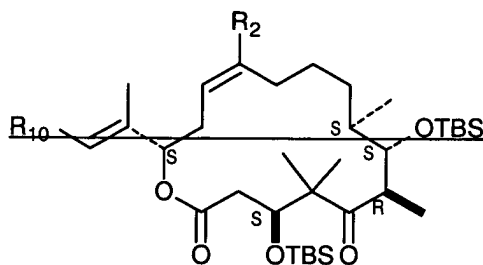
and stereoisomers thereof, wherein D is  $R_9\text{COO}$  ; ~~where~~  $R_2$  is H or methyl;  $R_7$  and  $R_8$  are each selected from TBS, H, and a protecting group, and wherein  $R_9$  is selected from alkyl, alkenyl, alkynyl, aryl, cycloalkyl, heterocyclo, and substitutions thereof.

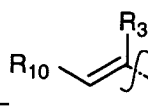
12. (Currently Amended) A method according to claim 10 wherein said fifth compound is converted to a sixth compound of a formula selected from:



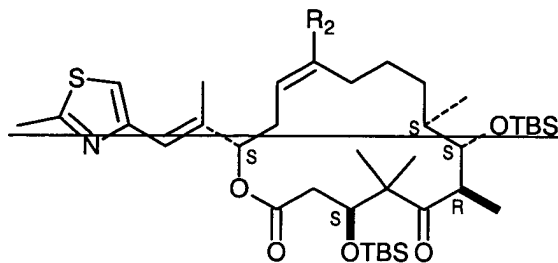
and stereoisomers thereof, wherein D is  $\text{O}=\text{C}$  ; ~~where~~  $R_2$  is H or methyl; and  $R_7$  and  $R_8$  are each selected from TBS, H, and a protecting group.

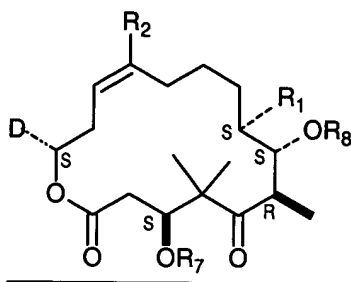
13. (Currently Amended) A method according to claim 12 wherein said fifth compound is converted to a sixth compound of a formula selected from:

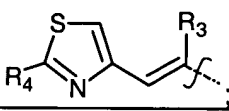


and stereoisomers thereof, wherein D is ; where R<sub>2</sub> is H or methyl; R<sub>7</sub> and R<sub>8</sub> are each selected from TBS, H, and a protecting group; and wherein R<sub>10</sub> is selected from alkyl, alkenyl, alkynyl, aryl, cycloalkyl, heterocyclo, and substitutions thereof.

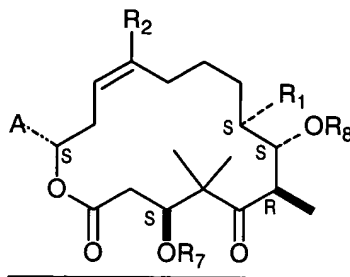
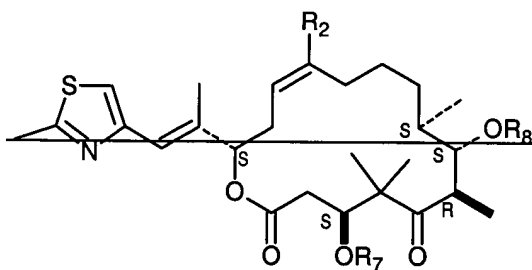
14. (Currently Amended) A method according to claim 13 wherein said sixth compound is of a formula selected from:

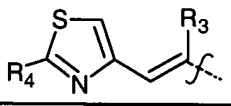




and stereoisomers thereof, wherein D is ; ~~where~~ R<sub>2</sub> is H or methyl; and R<sub>7</sub> and R<sub>8</sub> are each selected from TBS, H, and a protecting group.

15. (Currently Amended) A method according to claim 1 wherein said fourth compound is of a formula selected from:

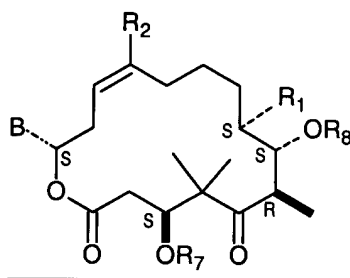
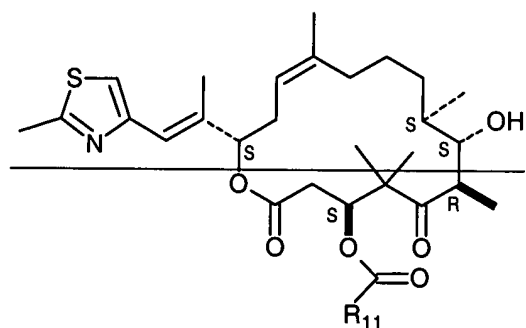


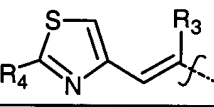
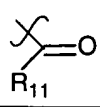
and stereoisomers thereof, wherein A is ; ~~where~~ R<sub>2</sub> is H or methyl; R<sub>7</sub> is H or TBS; and R<sub>8</sub> is H, TBS, or TROC.

16. (Original) A method according to claim 15 wherein said fourth compound is further converted to Epothilone B.

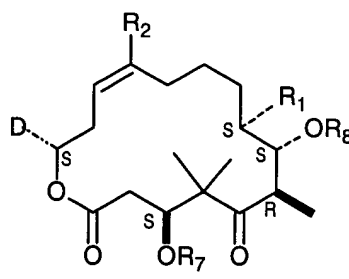
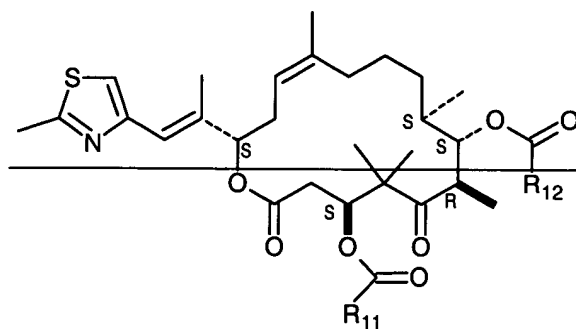
17. (Original) A method according to claim 15 wherein  $R_7$  and  $R_8$  each are H.

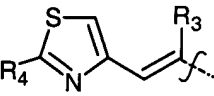

18. (Currently Amended) A method according to claim 17 wherein said fourth compound is further converted to a fifth compound of a formula selected from:




and stereoisomers thereof, wherein  $B$  is ;  $R_7$  is ;  $R_8$  is H; and  $R_{11}$  is selected from alkyl, alkenyl, alkynyl, aryl, alkyl-aryl, alkyloxy, aryloxy, cycloalkyl, heterocyclo, amino, sulfo, and substitutions thereof.

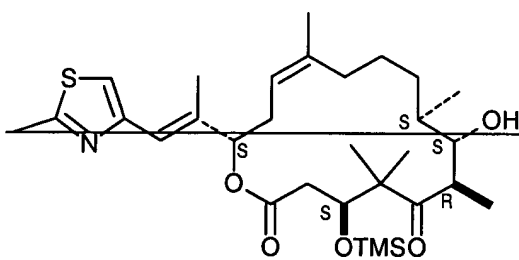
19. (Currently Amended) A method according to claim 18 wherein said fifth compound is further converted to a sixth compound of a formula selected from:

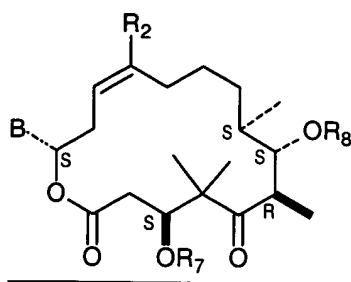


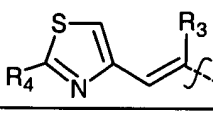
and stereoisomers thereof, wherein D is , R<sub>7</sub> is .

R<sub>8</sub> is , and R<sub>11</sub> and R<sub>12</sub> are each selected from alkyl, alkenyl, alkynyl, aryl, alkyl-aryl, alkyloxy, aryloxy, cycloalkyl, heterocyclo, amino, sulfo, and substitutions thereof.

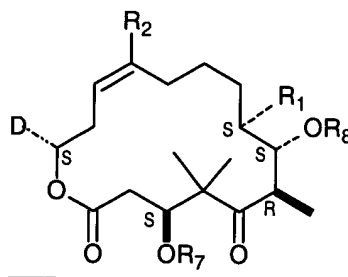
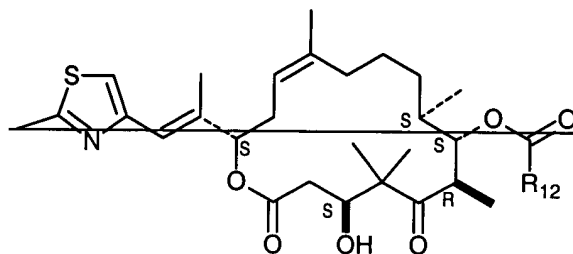
20. (Currently Amended) A method according to claim 17 wherein said fourth compound is further converted to a fifth compound of a formula selected from:

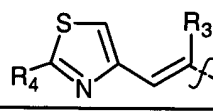
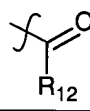




and stereoisomers thereof wherein B is ; R<sub>7</sub> is TMS; and R<sub>8</sub> is H.

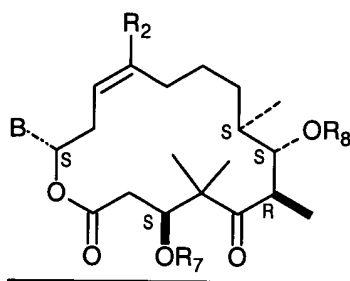
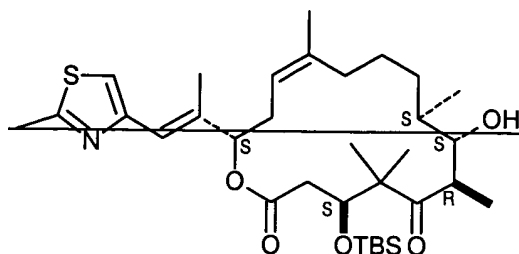
21. (Currently Amended) A method according to claim 20 wherein said fifth compound is further converted to a sixth compound of a formula selected from:

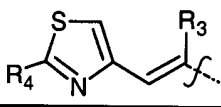


and stereoisomers thereof, wherein D is ; R<sub>7</sub> is H; R<sub>8</sub> is ; and R<sub>12</sub> is selected from alkyl, alkenyl, alkynyl, aryl, alkyl-aryl, alkyloxy, aryloxy, cycloalkyl, heterocyclo, amino, sulfo, and substitutions thereof.

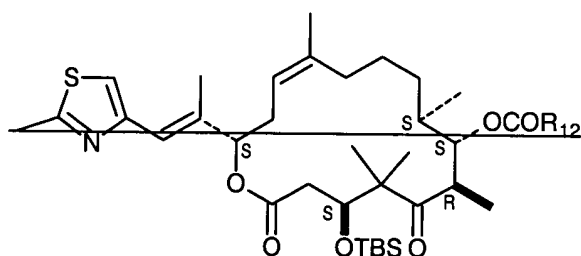
22. (Original) A method according to claim 15 wherein  $R_7$  is TBS and  $R_8$  is TROC.

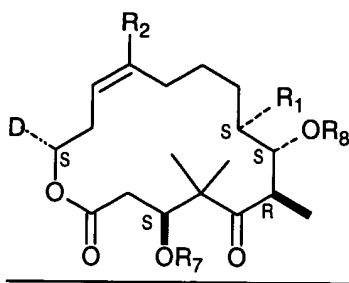
23. (Currently Amended) A method according to claim 22 wherein said fourth compound is further converted to a fifth compound of a formula selected from:

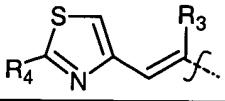


and stereoisomers thereof wherein B is ,  $R_7$  is TBS and  $R_8$  is H.

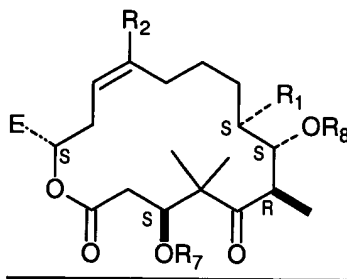
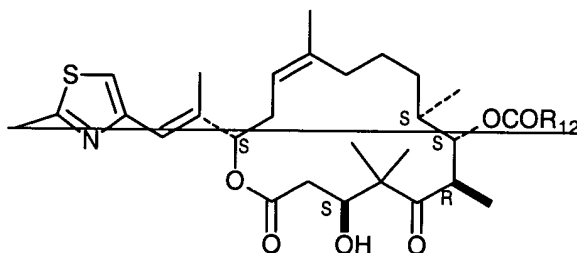
24. (Currently Amended) A method according to claim 23 wherein said fifth compound is further converted to a sixth compound of a formula selected from:

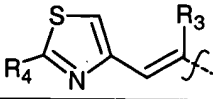




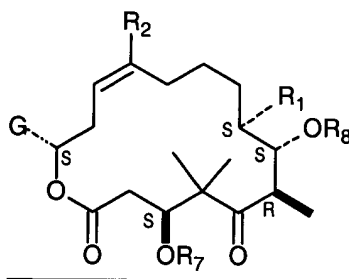
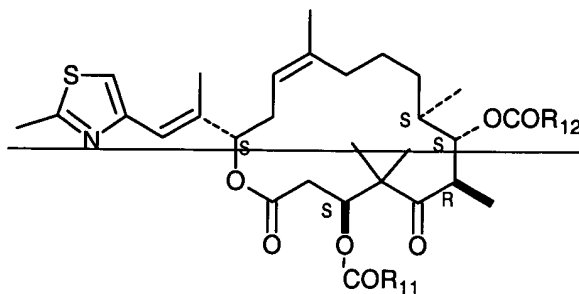
and stereoisomers thereof, wherein D is ; R<sub>7</sub> is TBS; R<sub>8</sub> is COR<sub>12</sub>; and R<sub>12</sub> is selected from alkyl, alkenyl, alkynyl, aryl, alkyl-aryl, alkyloxy, aryloxy, cycloalkyl, heterocyclo, amino, sulfo, and substitutions thereof.

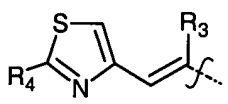
25. (Currently Amended) A method according to claim 24 wherein said sixth compound is further converted to a seventh compound of a formula selected from:



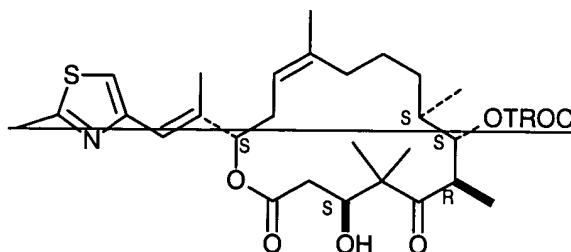
and stereoisomers thereof, wherein E is ; R<sub>7</sub> is H; R<sub>8</sub> is COR<sub>12</sub>; and R<sub>12</sub> is selected from alkyl, alkenyl, alkynyl, aryl, alkyl-aryl, alkyloxy, aryloxy, cycloalkyl, heterocyclo, amino, sulfo, and substitutions thereof.

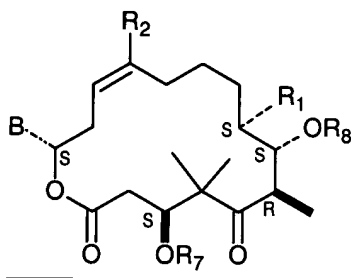
26. (Currently Amended) A method according to claim 25 wherein said seventh compound is further converted to an eighth compound of a formula selected from:

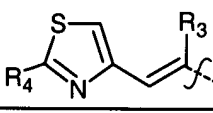


and stereoisomers thereof, wherein  $G$  is ;  $R_7$  is  $COR_{11}$ ;  $R_8$  is  $COR_{12}$ ; and  $R_{11}$  and  $R_{12}$  are each selected from alkyl, alkenyl, alkynyl, aryl, alkyl-aryl, alkyloxy, aryloxy, cycloalkyl, heterocyclo, amino, sulfo, and substitutions thereof.

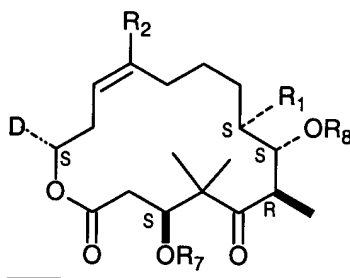
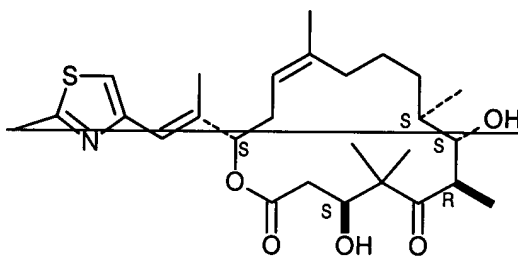
27. (Currently Amended) A method according to claim 22 wherein said fourth compound is further converted to a fifth compound of a formula selected from:

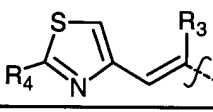




and stereoisomers thereof wherein B is ; R<sub>7</sub> is H; and R<sub>8</sub> is TROC.

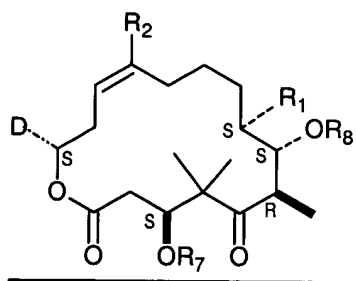
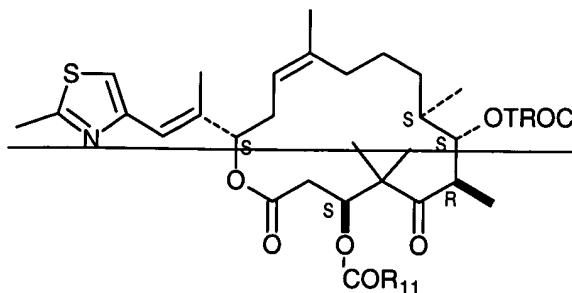
28. (Currently Amended) A method according to claim 27 wherein said fifth compound is further converted to a sixth compound of a formula selected from:

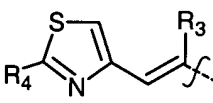


and stereoisomers thereof wherein D is  and R<sub>7</sub> and R<sub>8</sub> are each H.

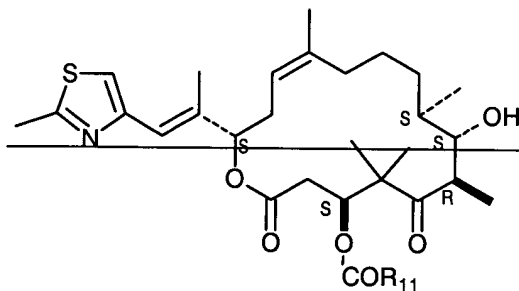
29. (Original) A method according to claim 28 wherein said sixth compound is further converted to Epothilone B.

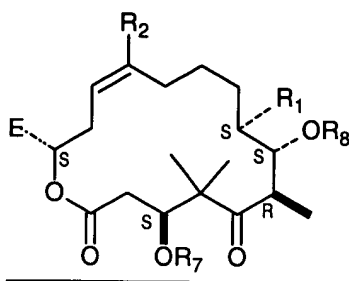
30. (Currently Amended) A method according to claim 27 wherein said fifth compound is further converted to a sixth compound of a formula selected from:

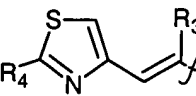


and stereoisomers thereof, wherein D is ; R<sub>7</sub> is COR<sub>11</sub>; R<sub>8</sub> is TROC;  
and R<sub>11</sub> is selected from alkyl, alkenyl, alkynyl, aryl, alkyl-aryl, alkyloxy, aryloxy,  
cycloalkyl, heterocyclo, amino, sulfo, and substitutions thereof.

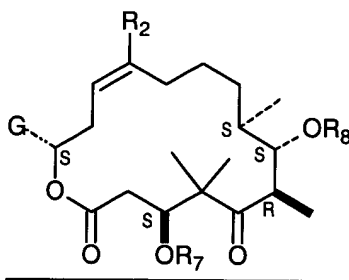
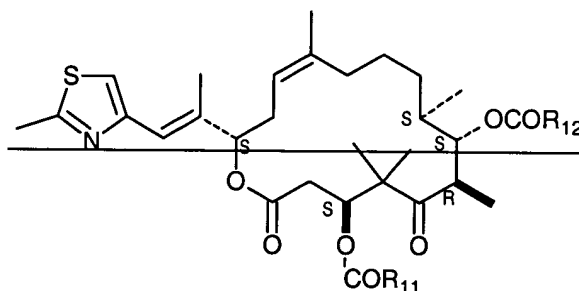
31. (Currently Amended) A method according to claim 30 wherein said sixth compound is further converted to a seventh compound of a formula selected from:

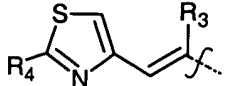




and stereoisomers thereof, wherein E is ; R<sub>7</sub> is COR<sub>11</sub>; R<sub>8</sub> is H; and R<sub>11</sub> is selected from alkyl, alkenyl, alkynyl, aryl, alkyl-aryl, alkyloxy, aryloxy, cycloalkyl, heterocyclo, amino, sulfo, and substitutions thereof.

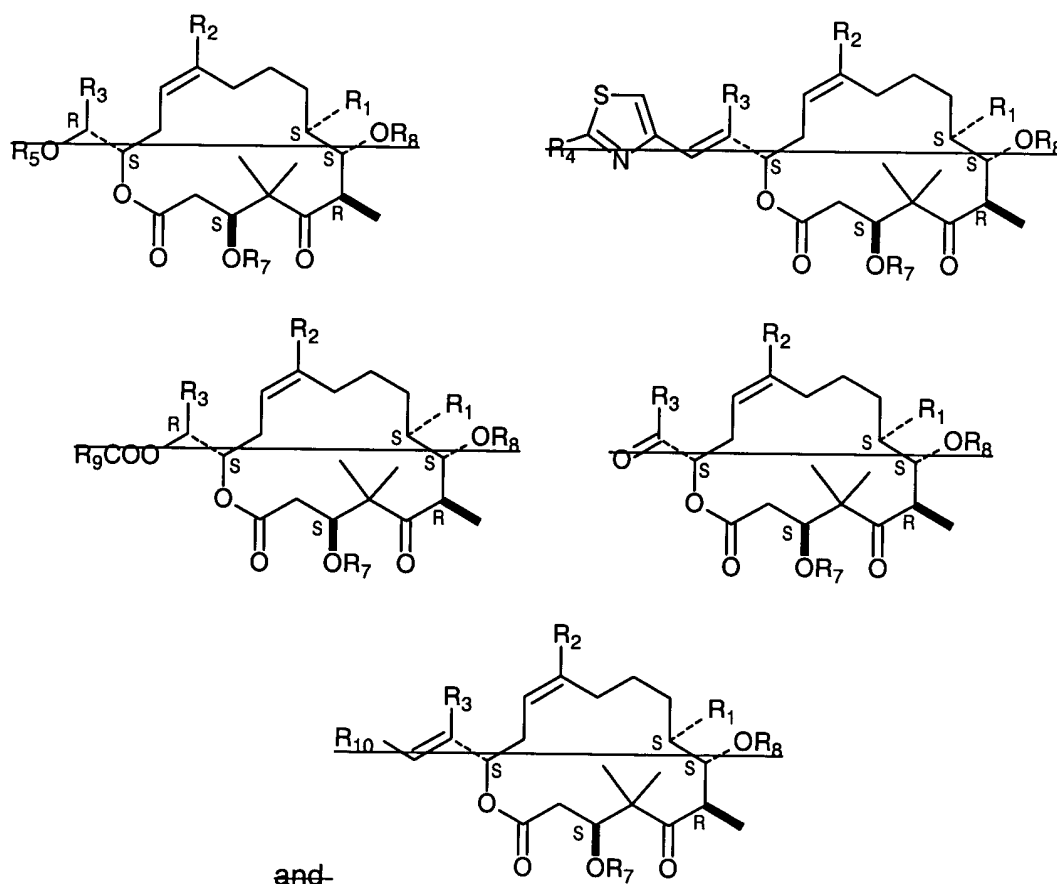
32. (Currently Amended) A method according to claim 31 wherein said seventh compound is further converted to an eighth compound of a formula selected from:

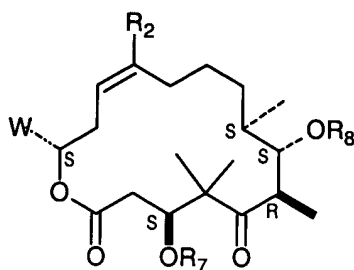


and stereoisomers thereof, wherein G is ; R<sub>7</sub> is COR<sub>11</sub>; R<sub>8</sub> is COR<sub>12</sub>; and R<sub>11</sub> and R<sub>12</sub> are each selected from alkyl, alkenyl, alkynyl, aryl, alkyl-aryl, alkyloxy, aryloxy, cycloalkyl, heterocyclo, amino, sulfo, and substitutions thereof.

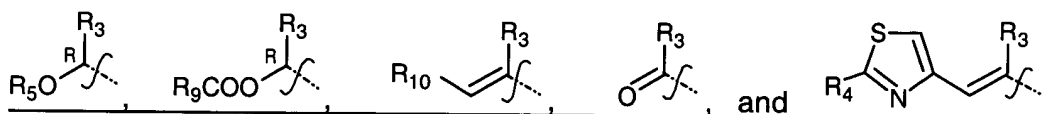
33. (Original) A chemical compound formed according to the method of claim 1.

34. (Currently Amended) A chemical compound according to claim 33 wherein said compound is selected from the formulas:





and stereoisomers thereof, wherein W is selected from



wherein  $R_1$ ,  $R_2$ ,  $R_3$  and  $R_4$  are each selected from H, alkyl, alkenyl, alkynyl, aryl, cycloalkyl, heterocyclo, and substitutions thereof; wherein  $R_5$  and  $R_6$  are each selected from H and a protecting group; wherein  $R_7$  is selected from H, a protecting group and  $COR_{11}$ ; wherein  $R_8$  is selected from H, a protecting group and  $COR_{12}$ ; wherein  $R_9$  is selected from alkyl, alkenyl, alkynyl, aryl, cycloalkyl, heterocyclo, and substitutions thereof; wherein  $R_{10}$  is selected from alkyl, alkenyl, alkynyl, aryl, cycloalkyl, heterocyclo, and substitutions thereof; and wherein  $R_{11}$  and  $R_{12}$  are each selected from alkyl, alkenyl, alkynyl, aryl, alkyl-aryl, alkyloxy, aryloxy, cycloalkyl, heterocyclo, amino, sulfo, and substitutions thereof.

35. Cancelled.

36. Cancelled.

37. Cancelled.

38. Cancelled.

39. Cancelled.

40. Cancelled.

41. Cancelled.
42. Cancelled.
43. Cancelled.
44. Cancelled.
45. Cancelled.
46. Cancelled.
47. Cancelled.
48. Cancelled.
49. Cancelled.
50. Cancelled.
51. Cancelled.
52. Cancelled.
53. Cancelled.
54. Cancelled.
55. Cancelled.
56. Cancelled.
57. Cancelled.
58. Cancelled.
59. Cancelled.
60. Cancelled.
61. Cancelled.
62. Cancelled.
63. Cancelled.

64. Cancelled.

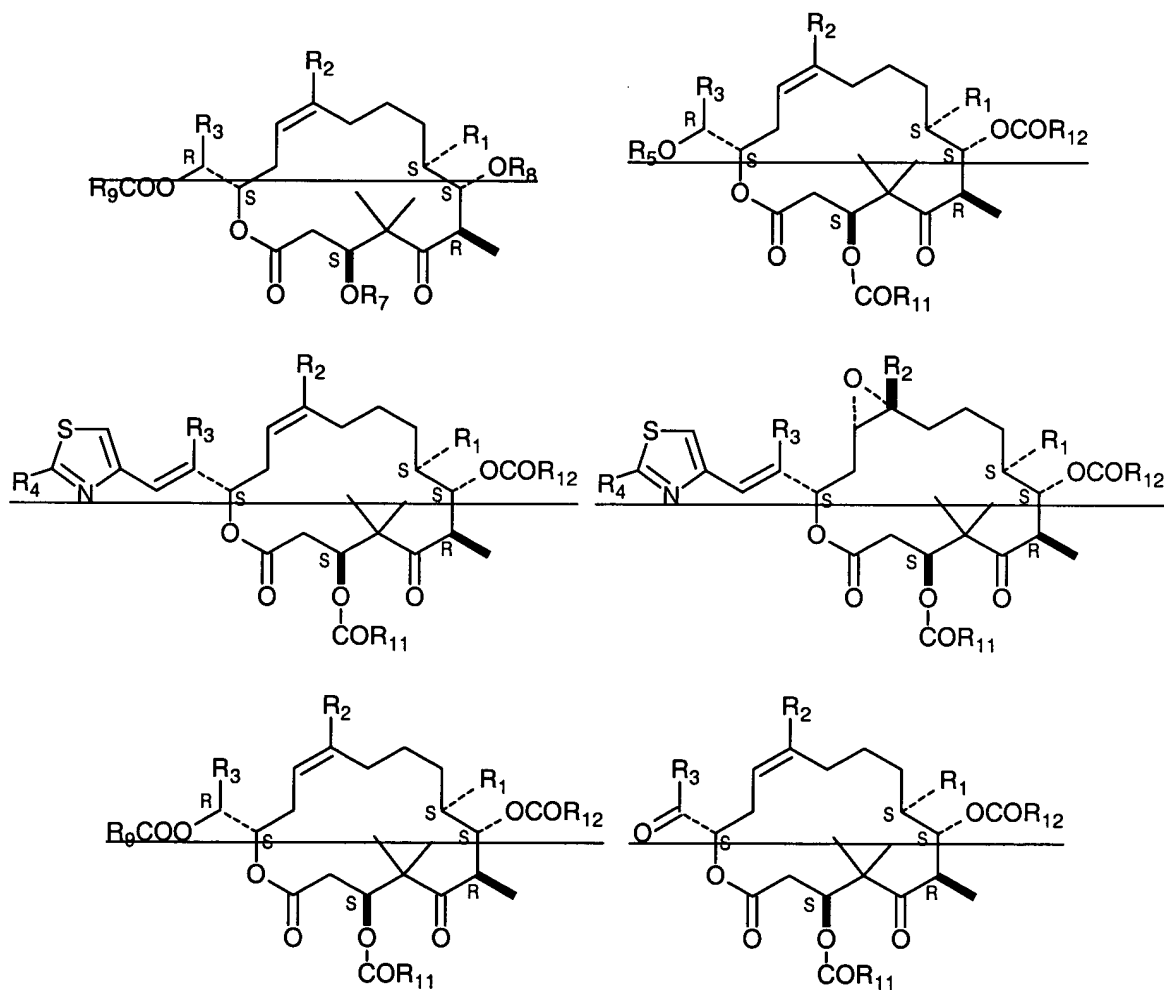
65. Cancelled.

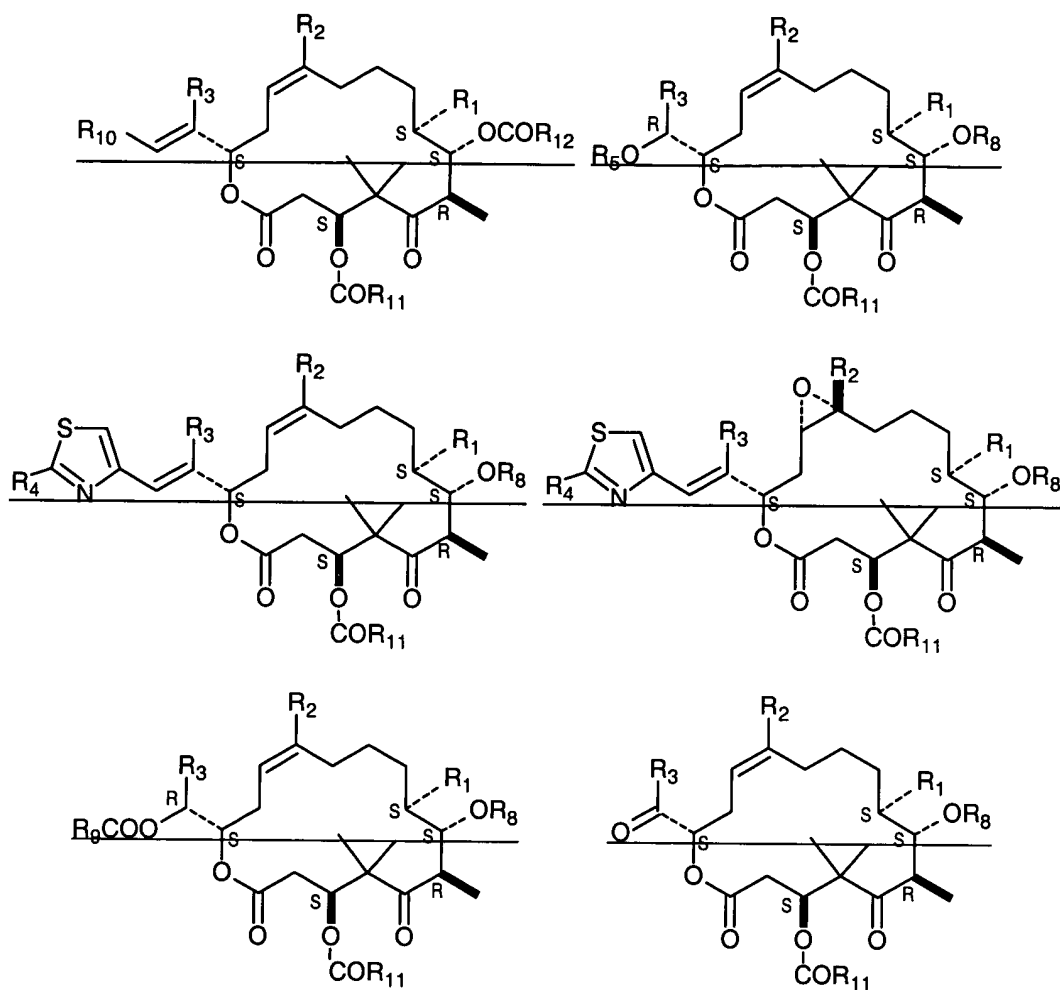
66. Cancelled.

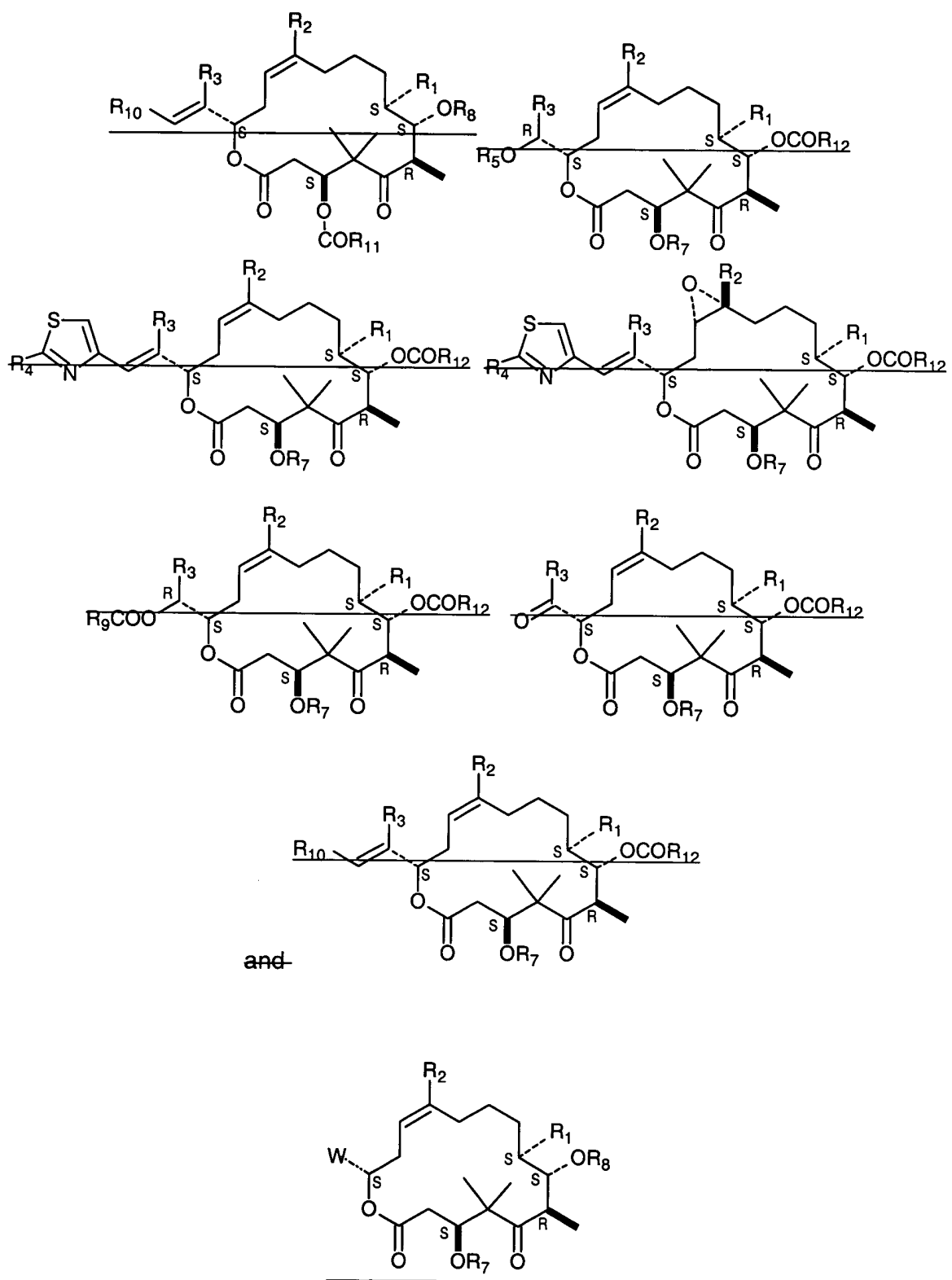
67. Cancelled.

68. Cancelled.

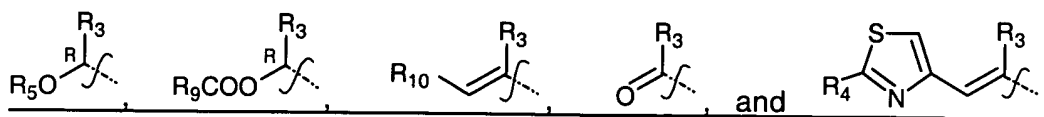
69. (Currently Amended) A chemical compound having a formula selected from:







and stereoisomers thereof, wherein W is selected from



wherein  $R_1$ ,  $R_2$ ,  $R_3$  and  $R_4$  are each selected from H, alkyl, alkenyl, alkynyl, aryl, cycloalkyl, heterocyclo, and substitutions thereof; wherein  $R_5$ ,  $R_6$ ,  $R_7$  and  $R_8$  are each selected from H and a protecting group; wherein  $R_9$  is selected from alkyl, alkenyl, alkynyl, aryl, cycloalkyl, heterocyclo, and substitutions thereof; wherein  $R_{10}$  is selected from alkyl, alkenyl, alkynyl, aryl, cycloalkyl, heterocyclo, and substitutions thereof; and wherein  $R_{11}$  and  $R_{12}$  are each selected from alkyl, alkenyl, alkynyl, aryl, alkyl-aryl, alkyloxy, aryloxy, cycloalkyl, heterocyclo, amino, sulfo, and substitutions thereof.

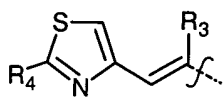
70. (Original) A chemical compound according to claim 69 wherein at least one of  $R_{11}$  and  $R_{12}$  is selected from  $-(CH_2)_xCH_3$  and  $-(CH_2)_yCH=CH_2$ , where x and y are integers.

71. (Currently Amended) A chemical compound according to claim ~~69~~70 wherein x and y are selected from the integers 3 and 4.

72. (Original) A chemical compound according to claim 70 wherein x is 4 and y is 3.

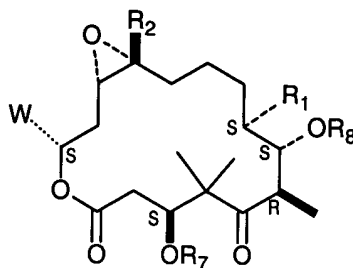
73. Cancelled.

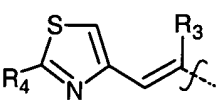
74. (New) A chemical compound according to claim 69 wherein W is



,  $R_2$  is H or methyl,  $R_7$  is H or  $COR_{11}$ ,  $R_8$  is H or  $COR_{12}$ , and wherein  $R_{11}$  and  $R_{12}$  are each selected from  $-(CH_2)_4CH_3$  and  $-(CH_2)_3CH=CH_2$ .

75. (New) A chemical compound having a formula



and stereoisomers thereof, wherein W is ; wherein R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> are each selected from H, alkyl, alkenyl, alkynyl, aryl, cycloalkyl, heterocyclo, and substitutions thereof; wherein R<sub>7</sub> is selected from H, a protecting group, and COR<sub>11</sub>; wherein R<sub>8</sub> is selected from H, a protecting group, and COR<sub>12</sub>, and wherein R<sub>11</sub> and R<sub>12</sub> are each selected from alkyl, alkenyl, alkynyl, aryl, alkyl-aryl, alkyloxy, aryloxy, cycloalkyl, heterocyclo, amino, sulfo, and substitutions thereof.

76. (New) A chemical compound according to claim 75 wherein at least one of R<sub>11</sub> and R<sub>12</sub> is selected from  $-(CH_2)_xCH_3$  and  $-(CH_2)_yCH=CH_2$ , where x and y are integers.

77. (New) A chemical compound according to claim 76 wherein x and y are selected from the integers 3 and 4.

78. (New) A chemical compound according to claim 76 wherein x is 4 and y is 3.